

DATA RETRIEVAL SYSTEM FOR FLOWER CROP CULTIVATION

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ABSTRACT

With the expansion of cities and rapid urbanization, the floriculture sector has gained momentum. Flower crops are preferred by the farmers due to their quick and high return per unit area. Every farmer is expected to have thorough knowledge of different flower crops and their cultivation and production aspects. Information and communication technology (ICT) can provide farmers with information pertaining to sowing, better varieties, crop protection, and soil health that enables them to improve agricultural productivity. In the last decade, IT has become an essential part in every aspect of research. There is a need to develop information system for data retrieval on flower crop development which encourage the dissemination of research findings. The efficiency of crop information system can be increased by integrating all the crop cultivation information generated through research experiments. In this paper, we provide information on cultivation and management practices, plant protection measures, many improved varieties/hybrid selections of flower crops developed at ICAR-IIHR, Bengaluru which are popular among the flower growers in the country. The Institute undertakes multi-disciplinary research and extensively participates in the post graduate education programme and has MOU with reputed universities for imparting higher education in the field of horticultural sciences. This web based data retrieval system for flower crops will provide useful information for farmers, students and other entrepreneurs on different flower crops for obtaining higher yield and income.

KEYWORDS: *Cultivation Practices, Flower Crops, Information System, Research, System*

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1. INTRODUCTION

Floriculture is a branch of horticulture which deals with the growing of flower crops from planting to harvesting. The floriculture sector has gained momentum with the expansion of cities and rapid urbanization. Flowers play an important role in the economic development (Chawla *et al.*, 2016) of the country. With more export oriented units coming into operation, exports are likely to grow up in the coming years. Flowers are cultivated under protected, semi-protected and open field conditions. Loose flowers are used for garlands, decorations and extraction of essential oil. Cut flowers are marketed in bunches or as bouquets. In recent decades, there has been increasing interest in floriculture and its products and there has been a thrust on the export of cut flowers (Debajith & Sudip, 2016). Floriculture is a lucrative business which offers tremendous scope for farmers in income enhancement and empowerment. Floriculture has a lot of potential in the export market and research industry (Shelke, 2014). A large amount of information is generated by the scientists involved in floriculture research at ICAR-IIHR, Bengaluru. Data recording considerably increases the amount of information that can be collected regarding the crop. The effectiveness of an information system can be improved by integrating all the flower crop cultivation information. The Department of Agricultural Research and Education (DARE) focuses on the agricultural research and education needs of the country and the Indian Council of Agricultural Research (ICAR), an autonomous organization manages and coordinates this responsibility through different institutes working on mandated crops

across the country. ICAR-IIHR is located in Bangalore, Karnataka involved in intensive horticulture research has developed many technologies and varieties that contribute significantly to the farming community in disseminating horticultural information and bringing awareness on crop management aspects.

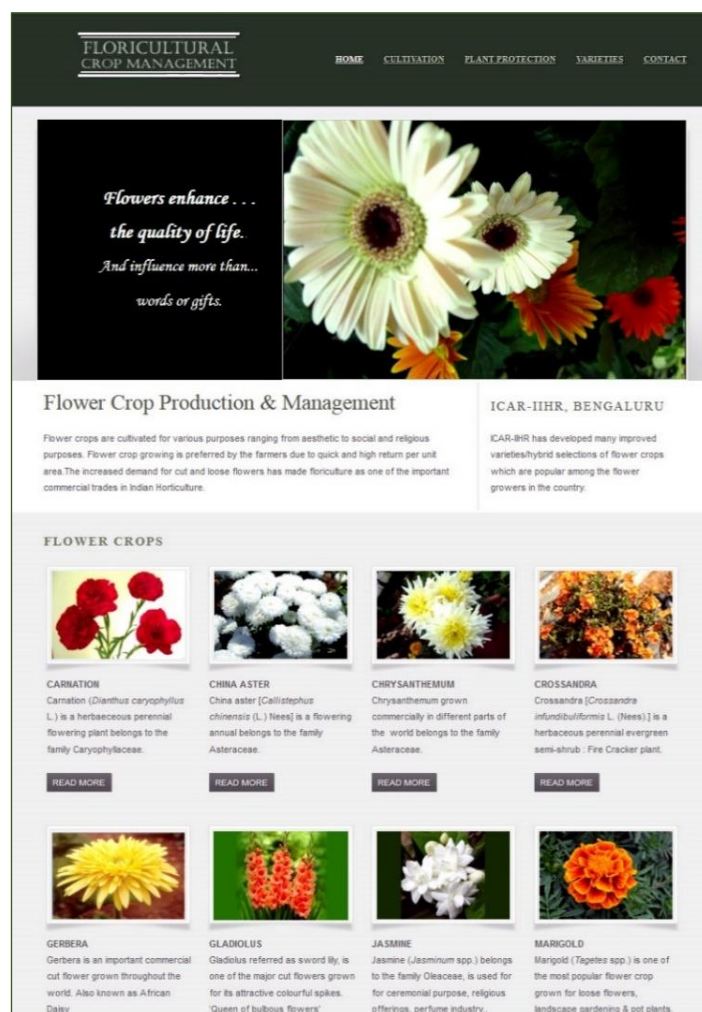
The rapid development in the field of information and communication technology has accelerated research in the development of agricultural models, data processing techniques and refinement. There is a need to develop information systems (Whitten *et al.*, 2001) to improve education and the method of dissemination of research findings to needy farmers in a timely manner (Reddy & Ankaiah, 2005). Developing an information system is the best way to disseminate the information generated to the farming community. Hence, this research work to develop a data retrieval system was carried out to retrieve and display information on cultivation, production, plant protection measures, and improved varieties/hybrid selections of flower crops developed at ICAR-IIHR, Bengaluru.

2. METHODOLOGY

The application is developed at ICAR-IIHR developed in the Windows platform using Microsoft web expressions. Using web technologies, web pages were developed for the interface and sites that let transfer files between the computer and the hosting account. The web page design for the information system was developed with HTML5, CSS, Bootstrap and JavaScript. The data were obtained by collecting information on different flower crops from the scientists of the institute working on crop protection, crop production, post-harvest management, nutrient management, etc. To spread knowledge and information more efficiently and to bridge the knowledge gap, web-based information systems play an important role. In the development phase of this data retrieval system, the system provides different web pages to display the data in a structured way. The information on all the flower crops along with optimized images are stored and hosted on the main server using Internet Information service (IIS 7.0) and Windows OS. The web based information system (Worwa and Jerzy, 2010) can be accessed and used from any computer connected to the Internet using a standard browser. Web based developed systems (Brusilovsky *et al.*, 2007) does not cause space limitations as there is no need to install the applications on the computer. The system use images of various pests and disease affecting the flower crops and flower crop varieties released which are popular among the flower growers. The home page is designed with a navigation menu and required hyperlinks. With the navigation menu, the information on specific contents on the flower crop information system can be accessed.

3. RESULTS

The web based flower crop retrieval system was developed for important flower crops like Gerbera, Carnation, Gladiolus, Aster, Crossandra, Jasmine, Marigold, Rose, Chrysanthemum, Tuberose, Orchids and Bougainvillea. The information system provides enhanced capabilities to retrieve the information related to flower crop cultivation specific to cultivation practices, such as soil, climate, propagation, irrigation, nutrient management, harvesting and yield. The information is organized in a way the user can retrieve it crop wise. The home screen was provided with simple icons for easy accessibility based on specific flowers. Every flower was provided with a simple description and read more hyperlinks to traverse across selected pages.



The system was designed using Expression studio software for the front end to make it more appealing and user friendly access. The retrieval of information using simple hyperlinks was created using HTML5 and scripting languages. With the graphical user interface, the navigation from one page to other web pages is made simple and attractive. The Home screen was segmented in various sub section accessible using navigational bar and hyperlinks. Various sub-section display information on best cultivation practices, control measures on various pests and disease affecting the crops, varieties/hybrids released from IIHR, etc. Images help users in data visualization. The information of each sub section specific to cultivation aspects of ornamental crops are listed sequentially from land preparation to yield. These information are collated from different crops and displayed where the user can view and compare crop wise the vital information viz. its temperature soil, varieties, propagation seed rate etc., pertains to each flower crop on the same window in adjacent columns. Similarly, for the plant protection measures the web pages are designed in a way that it lists flower crops' names one below the other for easy access. On clicking the crop name the major pest and disease affecting that particular crop are displayed along with the control measures (Thomas & Chandra Prakash, 2020) that can be followed for better management of flower crops.

This data retrieval system is developed for providing information during the flower crop cultivation to the farmers and other stakeholders. Moreover, other users and students can also get helpful information from the retrieval system. The

system plays a role as an interface between the research community and end user where users can easily access through the web browser for crop management decisions.

4. CONCLUSIONS

The information system on flower crops was developed for farmers on different flower crops for obtaining higher yield and income. The system can be retrieved from the ICAR-IIHR website main page <https://iihr.res.in> under web applications link and can be accessed on all compatible browsers in digital devices across all platforms.

5. ACKNOWLEDGEMENT

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